
**USING ELECTRONIC TEXTBOOKS IN PRIMARY EDUCATION: STUDENTS-
PROSPECTIVE PRIMARY TEACHERS' VIEWS**

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Abstract: Bulgaria is now in a process of major changes and reforms in the field of education that involve the implementation of various strategies and regulations. Updating the curricula for school and preschool education has led to the development of new textbooks and teaching aids. Primary and middle school textbooks sets for all subjects were replaced with new ones complemented by their compulsory electronic versions. These e-versions are not only covering the topics and content of the printed versions of the textbooks, but include additional e-resources. Some research of the new textbooks contents has already been done by authors such as Kirova (Kirova, 2018; Кирова, 2018). She compares different components of the curriculum content and the way they are developed in the mathematics textbooks, but the components of the adjunct electronic textbooks (e-textbooks) are not yet analysed. Their examination is necessary for teachers’ practice as well as for the preparation of prospective primary teachers for using e-textbooks in the classroom. No special training for working with e-textbooks is provided in prospective teachers’ current university preparation. However, digital competence is one of the key competences which are developed in primary education programs in Faculty of Educational Studies and the Arts (FESA), Sofia University, Bulgaria. Although it is generally acknowledged that students use digital devices very often and their skills are sufficient for blended learning (Цанев, 2018), yet it is not clear if students’ digital competencies are sufficient for using e-textbooks. Furthermore, there is a gap in the literature about students’ views and attitudes towards working with e-textbooks. Along with their competencies, students’ attitudes are important for successful implementation of e-textbooks in their teaching. Therefore, Sofia University Scientific Research Fund funded project №80-10-170/2019 “*Practical aspects of students-prospective primary teachers’ preparation for working with electronic resources*” whose main objectives include exploration of the views, preparation and readiness of students-prospective primary teachers about the usage of e-textbooks in primary education. As a part of the project, this study analyses students’ views in terms of necessity of using e-textbooks, their benefits and the requirements that e-textbooks have to meet in order to be used effectively in primary education.

Data include an online survey which was conducted during the summer term of academic year 2018-2019 and was completed by 166 students-prospective primary teachers from bachelor and master degree programs at FESA (SU), Bulgaria. The results revealed that the surveyed students generally have positive views about the usage of e-textbooks in education and are well aware of their advantages. They recognized their potential to better visualise learning content and save teachers time. The content that e-textbooks should include and the requirements that e-textbooks have to meet in order to be effectively used in the classroom are also discussed in the paper.

Keywords: electronic textbooks, e-textbooks, primary teachers training, prospective teachers, Bulgaria

1. INTRODUCTION

Since 2015 Bulgaria is undergoing a major educational reform. One of the reforming strategies that affects all stages of education is related to the implementation of ICT in education³². One of its main aims is to implement electronic textbooks and other e-resources in schools by 2020. It is intended to provide an access to educational resources to all students electronically. The idea is to make online lessons accessible from different electronic devices – laptops, smartphones, tablets, etc. in order to increase students’ interest in learning content, to provide more attractive lessons and easier access to knowledge through e-textbooks and other types of e-resources. E-textbooks are now a compulsory part of the textbook sets for each school subject for grades 1 to 7. Although according to the Ministry of Education their usage is optional for teachers and students³³, e-textbooks are one of the most commonly used e-resources by Bulgarian teachers (Терзиева, Тодорова, & Кадемова-Кацарова, 2016; Алексиева, 2019). In legislative aspect, the requirements for the electronic versions of the textbooks are listed in ORDINANCE No.

³²Работна група към Министъра на образованието и науката (2014). Стратегия за ефективно прилагане на информационни и комуникационни технологии в образованието и науката за 2014-2020 година (Strategy for Effective Implementation of ICT in Education and Science of the Republic of Bulgaria for 2014-2020). Retrieved from https://mon.bg/upload/6543/strategia_efektivno_ikt_2014_2020.pdf

³³ Икономедиа АД. (01 09 2017 г.). Електронните учебници се ползват само по желание на учители и ученици. Retrieved from: https://www.dnevnik.bg/detski_dnevnik/2017/09/01/3034351_elektronnite_uchebnici_se_polzvat_samo_po_jelanie_na/

10/19.12.2017 for educational books, textbooks and teaching aids³⁴. According to Art. 23, para. 1 and 2 of the Ordinance, the content of the electronic version of a textbook must meet the following requirements: 1) to be consistent with the topics and the learning outcomes of the curriculum; 2) to be consistent with the age characteristics of the students; 3) to promote autonomy and thinking; 4) to include for educational purposes various media formats which cannot be presented in the printed version of the textbook; 5) to stimulate interaction between the participants in the educational process; 6) to support the use of various approaches and strategies for learning as well as learning through practice; 7) to enable self-assessment of students' achievements. Undoubtedly, these requirements are essential for the quality of every e-textbook but still there is a lack of detailed information about how to promote autonomy, what media formats are recommended, how interaction should be stimulated and so on. No instructions are provided by the Ministry of Education regarding the visual design requirements or the specific organisational forms of using e-textbooks in the classroom. Furthermore, there is a gap in the literature about the specific requirements for e-textbooks in primary education, both in terms of practice and in terms of teachers' attitudes towards using them. Some authors as Kirova (Kirova, 2018; Кирова, 2018) analyse comparatively the new textbooks for primary mathematics education. She examines and compares different components of the curriculum content and the way they are developed in the textbooks, but still the components of the adjunct e-textbooks are not analysed. Their e-contents should also be explored and conclusions should be drawn that would serve for teachers' practice as well as for the preparation of prospective primary teachers.

The benefits of using e-textbooks are well recognized – a number of studies outline their main advantages. In general, they are: their smaller size (they do not weigh); the opportunity to search easily in the text, to highlight and copy text; the faster update of the information in comparison to the print versions; the interactive presentation of the information; their lower cost (Waller, 2013; Renner, 2007; JISC, 2003; Nachimuthu, 2012). According to some teachers, e-textbooks are appropriate for all school subjects and have potential to support the learning process (Кръстева, 2017), however, some researchers claim that pupils learn more effectively from printed textbooks than from electronic ones (Singer & Alexander, 2017). The author's observations during the last 7 years' provision of practical training of prospective primary teachers in different schools in Sofia (Bulgaria) showed that teachers encounter difficulties and obstacles in using e-textbooks. One of them is that e-textbooks are available only online and often the internet connection in the classroom is poor. Good internet connection is a compulsory requirement for the e-resources (especially interactive and multimedia ones), and its lack can ruin even a well-planned lesson. Some textbooks publishers provide the solution to this problem by the provision of specialised offline reader. Nevertheless, e-textbooks advantages are quite dependant on their learning content and design as well as the appropriate approaches and strategies for using them in the classroom. Unfortunately, most teachers are not trained to work with e-textbooks as this is not a mandatory part of their university education. Yet one of the key competences which are developed in primary education programs in FESA (Sofia University) is a digital competence. As Tsanev (2018) pointed "modern university students' use various electronic devices in their everyday life. Most of them use a computer for e-mail and social networking. Online chat and online games are also utilized by students, while blogging is relatively rarely used in students' everyday life. It is generally acknowledged that students use ICT very often and their skills are sufficient for blended learning." (Цанев, 2018, p. 80). Yet it is not clear to what extent students' digital competencies related to the everyday usage of ICTs could meet the requirements for effective using and teaching through e-textbooks. Moreover, their views and attitudes towards working with such e-resources have not been explored. In addition to their digital competencies, it is essential for them to have a positive attitude, to be aware of the advantages and disadvantages of e-textbooks, so that they can use them adequately in the classroom. Therefore, the focus of this study is students-prospective primary teachers' views about using e-textbooks in primary education. Their views are mainly explored in terms of the necessity and the benefits of using e-textbooks as well as the requirements that e-textbooks must meet in order to be used effectively in the classroom.

2. METHODOLOGY

This study utilized a mixed methods research design as combining elements of qualitative and quantitative data collection and analysis. It attempted to answer the following research question: "*What are the views of prospective primary teachers to the use of e-textbooks in primary education?*".

Participants: An online questionnaire with prospective primary teachers from bachelor and master degree programmes at Faculty of Educational Studies and Arts (Sofia University, Bulgaria) was conducted at the beginning

³⁴ МОН. НАРЕДБА №10 от 19 декември 2017 г. за познавателните книжки, учебниците и учебните помагала (обн., ДВ, бр. 102 от 22.12.2017 г.). Retrieved from: <https://www.mon.bg/upload/15596/nrd10-2017-uchebnici-240418.pdf>

of the summer term of academic year 2018/2019. A total of 166 students completed the questionnaire, 94% of which were female participants. The participants' distribution according to their educational programme, age group and professional experience is presented in table 1.

Table 1. Distribution of respondents according to their age group, educational program and professional experience³⁵

Educational Programme	% of all respondents (N=166)	Age group	% of all respondents (N=166)	Professional experience	% of all respondents (N=166)
Primary Education (Bachelor Degree)	50,9%	from 21 to 25	53,0%	I do not have any professional experience	54,8%
		from 26 to 35	22,9%	Less than 5 years	30,7%
Primary Education (Master Degree)	49,1%	from 36 to 45	18,1%	From 6 to 15 years	12,2%
		46 and over	6,0%	More than 16 years	11,1%

Data Collection and Analysis: Data was collected using an online questionnaire through Google Forms tool. The questionnaire included items related to different aspects of the study. Some of them were based on conclusions from previous study about the primary teachers' attitudes towards the use of e-resources in primary education in Bulgaria (Aleksieva, 2019). Part of the questions in the questionnaire examined the views of the students to the usage of e-textbooks in primary education, the other examined the students' preparation and readiness to work with e-textbooks. The focus of this study is the part concerning views of prospective primary teachers and only the data related to this issue is presented and analysed in the paper. Descriptive statistics is primarily used for the data analysis.

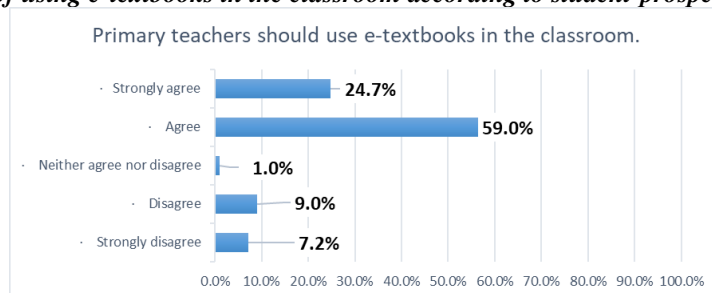
3. RESULTS AND DISCUSSION

Students-prospective primary teachers' views about using e-textbooks were examined through several questions in the survey which were related to the necessity and the potential advantages of e-textbooks and the requirements which they should meet in order to be effectively and efficiently used in education.

3.1. Necessity of using e-textbooks in education according to students-prospective primary teachers

The first Likert scale question aimed to find out to what extent students identify the usage of e-textbooks as a necessary in the classroom. The results revealed that 83% of the respondents agreed (25% of which strongly agreed) that teachers should use them (see Figure 1). Only 16% of the respondents did not agree that it is necessary for primary teachers to use e-textbooks and less than 1% could not decide. It means that most of the students acknowledge the advantages of using e-textbooks in primary education and find their usage necessary.

Figure 1. Necessity of using e-textbooks in the classroom according to student-prospective primary teachers



In order to explore deeper this aspect of students' views, they were asked to specify in which school subject they think it is necessary for teachers to use e-textbooks (see Table 2). The respondents were asked to mark from the list as much school subjects as they found relevant. The most chosen subject (67%) was Computer Modelling (CM). This subject was firstly implemented in Bulgarian schools in 2018/2019 school year and it involves a project-based learning through ICT. Probably students associated this subject to an inevitable usage of ICT and thus define e-textbooks as a necessary for the CM lessons. The other subjects that students determined as necessary to be taught through e-textbooks were mainly those related to Science as well as the subject Man and Society (between 60% and 65%). About half of the students believe that in the subjects as mathematics (58%), Bulgarian language and literature (45%), foreign language (51%), as well as Technology and Entrepreneurship (50%) it is necessary to use e-textbooks. The less necessary usage of e-textbooks students identified in the subjects Arts (22%), Music (28%) and the Class sessions (27%). The respondents that consider it necessary for all school subjects to be taught through

³⁵ In all tables the percentages are rounded to the first decimal, thus the final result may exceed or fall behind 100%. This type of rounding values is consistent with Eurostat's rounding rules (https://ec.europa.eu/eurostat/statistics-explained/index.php/Tutorial:Rounding_of_numbers).

e-textbooks are less than 15%, and those that do not found it necessary at all to use e-textbooks in the classroom was less than 4%.

Table 2. School subjects in which it is necessary for primary teachers to use e-textbooks according to the respondents

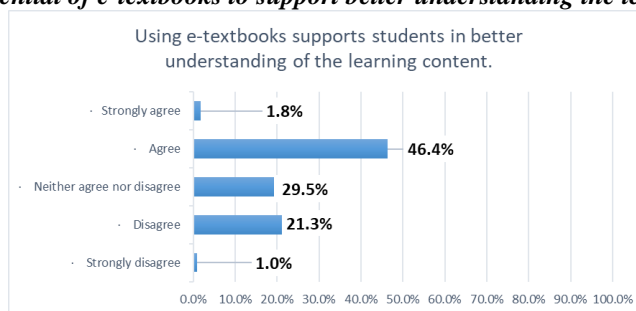
School subject in which it is necessary for primary teachers to use e-textbooks	% of Respondents (N=166)	School subject in which it is necessary for primary teachers to use e-textbooks	% of Respondents (N=166)
• Mathematics	58.4%	• Art	22.3%
• Man and Nature (Natural Science)	64.5%	• Music	27.7%
• Environmental Study	60.2%	• Class session (personal, social, health and civic education)	26.5%
• Man and Society (History and Geography)	61.4%	• Computer Modelling	66.9%
• Bulgarian Language and Literature	45.2%	• All of the above	13.9%
• Foreign Language (English, German, French etc.)	51.2%	• It is not necessary at all	3.6%
• Technology and Entrepreneurship	50.0%		

Students’ responses outlined their views about the ways e-textbooks could be used. The subjects that are determined as most necessary to be taught through e-textbooks are those that require more visualization of learning content although subjects as Art and Music are also supposed to involve good visualisation. The results confirmed what Krasteva’s (Кръстева, 2017) stated that e-textbooks are appropriate for all school subjects, but to different extent. Their advantages and how they could support the learning process is explored in the next section.

3.2. Advantages of using e-textbooks in education according to students-prospective primary teachers

In the previous study of primary teachers’ attitudes towards e-resources (Aleksieva, 2019) many advantages of e-resources were predefined based on the literature and some were derived from teachers’ responses. One of them is the statement that e-resources support students in better understanding of the learning content. As it is seen in figure 2, less than a half (46%) of the respondents share the view that using e-textbooks will support students in better understanding of the learning content, while slightly more than 1/5 of them do not agree that using of e-textbook support children in better understanding the learning content. It is interesting that almost 1/3 of the surveyed students could not decide. Having in mind that surveyed prospective primary teachers are not much experienced in teaching (55% do not have any professional experience) the uncertainty in their answers could be easily explained. It could also be assumed that the respondents realize that e-textbooks will not support better understanding if they are not used appropriately. This assumption would lead to the conclusion that students-prospective primary teachers have realistic view about this potential advantage of e-textbooks.

Figure 2. Potential of e-textbooks to support better understanding the learning content



The other important aspect of the study is related to the potential of e-textbooks to facilitate teachers work. Students’ opinions were examined through a dichotomous question (*Do you think that using e-textbooks will facilitate teachers’ work?*) which answer they were required to justify (*Why?*). Most of the respondents (87%) answered positively which means that the prospective primary teachers found using e-textbooks as a benefit for the teachers. The received 166 free responses were analysed qualitatively through content analysis and thus were grouped in categories. 18 of the responses were removed from the analysis since they were not meaningful (eg. “N/A” or repetitions of the question: “they facilitate teachers work”). Positive responses (a total of 130) were grouped in four main categories which represent **the main advantages of e-textbooks to facilitate teachers’ work** according to the respondents, as follows:

- **Better visualisation of learning content** (50 responses) – the most mentioned advantage showed that the respondents recognize the benefits of e-content to be multimedia and interactive. The responses imply that prospective teachers expect e-textbooks to present the learning content dynamically and not statically as printed textbooks. Their expectations about the e-textbooks contents will be reviewed in the next section.

- **Better adoption of learning content from the students** – this option is pointed by 41 respondents and their responses are closely related to previous advantage. Many of them explained that it is due to the better visualisation of the content. This confirms the researches in the area that prove the potential of multimedia to improve learning (Mayer, 2001; Йовкова, 2011; Алексиева, 2019b).
- **Saving time** – 18 respondents highlighted that using e-textbooks could save teachers time. Their comments were mainly related to the time that teachers spend in writing text, numbers and tasks on the blackboard as well as drawing or using another non-electronic strategy for visualising the learning content.
- **Access from anywhere** – 13 respondents pointed out that teachers as well as students could access the lessons from anywhere thus facilitating their preparation for the classes.

Some of the other positive responses (a total of 8) concerned the flexibility of e-content: *‘It is easier to work and prepare online content rather than papers. Interactive content allow teacher to be more flexible.’* (student in Master Degree program with less than 5 years of professional experience). Few respondents commented the opportunity to access additional information through e-textbooks.

Negative responses (a total of 18) could be determined as **disadvantages of using e-textbooks**. Five students mentioned that **using e-devices to read e-textbooks is harmful for children**, which concerns the case when each pupil is using a device and not the case when the textbook is displayed in front of the class (which is typical for Bulgarian schools). Four of the respondents commented that e-textbooks are **wasting time** which is just the opposite of what 18 of positive thinking students pointed. Probably these answers are given by students who experience difficulties in working with technologies and it takes too much time for them. Three students stated that **teachers will need additional training to work with e-textbooks**. Other opinions were more neutral: *“Teachers’ workload will remain the same”* (female student from Bachelor Degree program without teaching experience).

Despite the lack of professional experience of many respondents, they successfully outlined the main pros and cons of using e-textbooks. Negative comments are related directly or indirectly to teachers’ preparation which once again emphasizes the necessity of appropriate teachers training for using e-textbooks in the classroom.

3.3. Requirements for effective use of e-textbooks in education according to the respondents

In order to be effectively used in education e-textbooks should meet different requirements, some of which are listed in the ORDINANCE No.10/2017. However, different e-textbooks approved for primary education offer very different e-content which meet requirements that are not very clear. In the literature e-textbooks which are considered as quality ones include interactive learning content, additional online tasks, tests, videos, and/or other multimedia and interactive elements (Алексиева, 2019a). The surveyed students were asked to point out what content e-textbooks should include to be effectively used in the classroom. The results presented in Table 3 revealed that they are almost unanimous that *interactive elements* should be included in e-textbooks. Most of the respondents also pointed the *multimedia elements*, which are closely associated to interactive elements. These results are not surprising having in mind that interactivity and multimedia are the main advantages of e-content over prints. Other popular answer was *video lessons* (66%) which is a logical choice since videos combine multimedia and interactivity. All e-textbooks distributed in Bulgarian primary schools consist of additional tasks and exercises which are often interactive and this is well recognized by the respondents (65%). Although *online assessment* could reduce teachers’ workload and self-assessment is one of the requirements in the abovementioned ordinance, not many respondents find this content necessary for e-textbooks (41%). As it was claimed in the introduction, additional comparative research of approved e-textbooks is needed in order to specify the content which primary education specialists developed as appropriate for this stage of education.

Table 3. Content that e-textbooks should include according to students-prospective primary teachers

To be effectively used in the classroom e-textbooks should include:	% of Respondents (N=452)
• Interactive elements (eg. Games, animations, visualisation of problem solving etc.)	90.4%
• Video lessons (eg. Ucha.se; Khan Academy etc.)	65.7%
• Multimedia elements (eg. Audio, video, graphics etc.)	72.9%
• Guidelines for the teachers	44.0%
• Additional tasks and exercises for the students	65.1%
• Instruments for online assessment	41.0%

The respondents were also asked to point out the requirements that e-textbooks should meet to ensure their effective usage. The results also revealed the extent to which prospective teachers are familiar with the specific usage of e-textbooks. The most pointed requirements by the surveyed students were that **e-textbooks should be accessible for students’ self-preparation** (74%); **should allow students to interact with them** (72%); and **should provide opportunity for offline usage** (70%). The access to the e-textbooks is once again highlighted which means that the respondents found it really important. The opportunity to interact with e-textbooks is also found important for the

survey participants which corresponds to the results of the previous question related to the interactive contents in e-textbooks. Equal shares are the prospective primary teachers' and the primary teachers in a previous study (Aleksieva, 2019) who emphasize the importance of offline usage of e-resources. This means that prospective teachers are well aware of the conditions in Bulgarian classrooms and realize that there is a chance to lack internet connection. Other highly rated requirement is that **e-textbooks should be online and not requiring an installation**, which to some extent is controversial to the previous option (to be available for offline usage). It is interesting that more than a half of the respondents (61%) have chosen both options (opportunities for online and offline usage) which means that they would like **e-textbooks to be flexible in mode of usage**. Many prospective teachers (60%) would like **e-textbooks to include guidelines, manuals and information that teacher will not need an additional training** which implies that they are not confident in using e-textbooks. Less than a half of the respondents (46%) think that **e-textbooks should provide an opportunity to be edited by the teacher**, although such option could provide excellent opportunities for differentiating and individualising the learning content as well as for creating specific assessment resources.

Table 4. Requirements that e-textbooks should meet in order to be effectively used according to the respondents

Requirements that e-textbooks should meet in order to be effectively used	% of Respondents (N=452)
• To be online and not to require installation	64.5%
• To be used offline (to not require internet connection)	69.9%
• To allow students to interact with them	71.7%
• To be accessible for students self-preparation	73.5%
• To include such guidelines, manuals and information that teacher will not need an additional training	59.6%
• To allow to be edited by the teacher	46.4%

4. CONCLUSIONS

The analysis of the data obtained from the survey of students-prospective teachers' views about the use of e-textbooks in primary education leads to some important conclusions and raise some questions for future research. In general, the prospective teachers believe that e-textbooks should be used in the classroom and acknowledge their advantages in teaching most of the primary school subjects which confirms the data from the literature review. Prospective primary teachers have realistic views about the potential advantages of e-textbooks – they are well aware that e-textbooks will not support better understanding if they are not used appropriately. The surveyed students recognized the benefits of e-textbooks to facilitate teachers' work in terms of providing better visualisation of learning content, saving teachers time and providing access from anywhere. They only underestimated the potential of e-textbooks to serve as online assessment instruments. According to the prospective primary teachers the requirements that e-resources have to meet to be effectively used in education are mainly related to their accessibility (being accessible for students, being accessible online and offline) and their opportunities for interaction. Interactive and multimedia elements are also the main types of e-content that students expect to found in e-textbooks. They are presumably aware that using such elements corresponds to the way that primary students perceive information.

Generally, the research results showed that students-prospective primary teachers have positive views about using e-textbooks in primary education but they also demonstrated the need of appropriate training for working with them. This is important conclusion for universities which should provide such training for prospective teachers in their curricula. The content of e-textbooks should be additionally analysed to serve as a basis for those training. The above mentioned requirements for effective use of e-textbooks which were also highlighted by previous studies should be taken into consideration from the authors, designers and publishers of e-textbooks.

ACKNOWLEDGEMENTS: This work is supported by Sofia University Scientific Research Fund Project, contract №80-10-170/16.04.2019 "Practical aspects of students-prospective primary teachers' preparation for working with electronic resources".

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